

ZHAO ET AL.
"GPS Assistance Messages in Cellular
Communications Networks And Methods Therefor"
Atty. Docket No. CS90038

Appl. No. 09/785,960
Confirm. No. 2853
Examiner K. Ferguson
Art Unit 2682

1. (Currently Amended) A method for updating a satellite positioning system [GPS] ephemeris data issue identifier transmitted to a satellite positioning system [GPS] enabled mobile station in a cellular communications network, comprising:

receiving satellite positioning system [GPS] ephemeris data at a reference node in communication with a cellular communications network;

generating an assistance message including satellite positioning system [GPS] ephemeris data and other parameters;

generating a satellite positioning system [GPS] ephemeris data issue identifier;

receiving updated satellite positioning system [GPS] ephemeris data and other updated parameters;

updating the satellite positioning system [GPS] ephemeris data issue identifier only when the satellite positioning system [GPS] ephemeris data has been updated.

2. (Currently Amended) The method of Claim 1, not updating the satellite positioning system [GPS] ephemeris data issue identifier when parameters other than the satellite positioning system [GPS] ephemeris data change.

3. (Currently Amended) The method of Claim 1,
transmitting a satellite positioning system [GPS] ephemeris data issue identifier over the cellular communications network,

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receiving the satellite positioning system [GPS] ephemeris data
issue identifier at a mobile station,

comparing the received satellite positioning system [GPS]
ephemeris data issue identifier with a corresponding satellite positioning
system [GPS] ephemeris data issue identifier stored at the mobile station,

reading a corresponding ephemeris assistance message at the
mobile station only if the received satellite positioning system [GPS] ephemeris
data issue identifier is different than the stored satellite positioning system
[GPS] ephemeris data issue identifier.

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4. (Currently Amended) The method of Claim 1,

receiving satellite positioning system [GPS] ephemeris data from a
plurality of satellites at a reference node in communication with a cellular
communications network;

generating a plurality of assistance messages including satellite
positioning system [GPS] ephemeris data from the plurality of satellites and
other parameters;

generating a satellite positioning system [GPS] ephemeris data
issue identifier for each of the plurality of assistance messages;

updating the plurality of satellite positioning system [GPS]
ephemeris data issue identifiers only when the satellite positioning system
[GPS] ephemeris data of the corresponding assistance message has been
updated.

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5. (Currently Amended) The method of Claim 4, encoding each of the satellite positioning system [GPS] ephemeris data issue identifiers and a corresponding satellite identifier in a corresponding sequence of binary digits, transmitting the sequence of binary digits over the network.

6. (Currently Amended) A method for updating a satellite positioning system [GPS] almanac data issue identifier transmitted to a satellite positioning system [GPS] enabled mobile station in a cellular communications network, comprising:

a) receiving satellite positioning system [GPS] almanac data at a reference node in communication with a cellular communications network;

generating an assistance message including satellite positioning system [GPS] almanac data and other parameters;

generating a satellite positioning system [GPS] almanac data issue identifier;

receiving updated satellite positioning system [GPS] almanac data and other updated parameters;

updating the satellite positioning system [GPS] almanac data issue identifier only when the satellite positioning system [GPS] almanac data has been updated.

7. (Currently Amended) The method of Claim 6, not updating the satellite positioning system [GPS] almanac data issue identifier when

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parameters other than the satellite positioning system [GPS] almanac data change.

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8. (Currently Amended) The method of Claim 6,
transmitting a satellite positioning system [GPS] almanac data
issue identifier over the cellular communications network,
receiving the satellite positioning system [GPS] almanac data issue
identifier at a mobile station,
comparing the received satellite positioning system [GPS] almanac
data issue identifier with a satellite positioning system [GPS] almanac data
issue identifier stored at the mobile station,
reading an almanac assistance message at the mobile station only
if the received satellite positioning system [GPS] almanac data issue identifier
is different than the stored satellite positioning system [GPS] almanac data
issue identifier.

9. (Currently Amended) The method of Claim 6, the satellite
positioning system [GPS] almanac data issue identifier is for a cell, updating
the satellite positioning system [GPS] almanac data issue identifier by
incrementing a 2-bit data field when the almanac data in the reference node is
updated.

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10. (Currently Amended) The method of Claim 6, the satellite positioning system [GPS] almanac data issue identifier for a Public Mobile Land Network (PLMN) value tag, updating the value tag by incrementing an 8-bit data field when the almanac data is in the reference node is updated.

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Claims 11 -15 (Canceled).

16. (Currently Amended) A satellite positioning system [GPS] ephemeris data issue identifier for transmission to a satellite positioning system [GPS] enabled mobile station in a cellular communications network, the satellite positioning system ephemeris data issue identifier comprising:

- a first field with satellite identifier data; and
- a second field with an ephemeris sequence number.

17. (Currently Amended) The satellite positioning system [GPS] ephemeris data issue identifier of Claim 16, the first field is at least 5 bits, the second field is at least 3 bits.

18. (Currently Amended) The satellite positioning system [GPS] ephemeris data issue identifier of Claim 16 is a broadcast message.

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Claims 19-24 (Canceled). •

25. (New) A method for updating a satellite positioning system navigation data value tag transmitted to a satellite positioning system enabled mobile station in a communications network, comprising:

91 receiving satellite positioning system navigation data at a reference node in communication with the communications network;

generating an assistance message including satellite positioning system navigation data;

generating a satellite positioning system navigation data value tag;

receiving updated satellite positioning system navigation data;

updating the satellite positioning system navigation data value tag only when the satellite positioning system navigation data has been updated, the satellite positioning system navigation data including at least one of ephemeris and almanac data.

26. (New) The method of Claim 25, encoding each of the satellite positioning system navigation data value tags in a corresponding sequence of binary digits as a 4-bit + 4-bit value tag, transmitting the sequence of binary digits over the network.

27. (New) A satellite positioning system navigation data issue identifier value tag for transmission to a satellite positioning system enabled

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mobile station in a communications network, the satellite positioning system navigation data issue identifier value tag comprising:

a first field with 4 bits; and

a second field with 4 bits,

the satellite positioning system navigation data including at least one of ephemeris and almanac data.

28. (New) The satellite positioning system almanac data issue identifier of Claim 26 is part of a broadcast message.
